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or proto-oncogene product is [encoded by a human oncogene or proto-oncogene] of human origin.

4. (Amended) A recombinant pox virus of Claim 1, wherein the [tumor associated antigen is encoded by a human oncogene and] oncogene or proto-oncogene product which is responsible or potentially responsible for oncogenic activity is rendered inactive [with respect to its oncogenic activity] by a mutational alteration.
 5. (Amended) A recombinant pox virus of Claim 1, wherein the [tumor antigen] oncogene or proto-oncogene product is encoded by the neu gene, the ros gene, the trk gene, the kit gene or immunogenic portions thereof.
 6. (Amended) A recombinant pox virus of Claim 1, wherein the [cell-encoded tumor associated antigen] oncogene or proto-oncogene product is [a] growth factor receptor [or growth factor receptor-like cell surface] molecule.
 7. (Amended) A recombinant pox virus of Claim 6, wherein the receptor [or receptor-like cell surface] molecule is encoded by the c-erbB gene.
 8. (Amended) A recombinant vaccinia virus containing, in a region of the viral genome nonessential for replication of the virus, one or more foreign oncogene or proto-oncogene
- Sub B2*

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encoding DNA sequences of cellular origin which encode an oncogene or proto-oncogene product [which encode a cell encoded, human tumor-associated antigen], the sequence or sequences being under control of a vaccinia promoter.

9. (Amended) A recombinant vaccinia virus of Claim 8, wherein the [tumor-associated antigen] oncogene or proto-oncogene product is [encoded by a human oncogene] of human origin.

- Sub B3* 10. (Amended) A recombinant ~~vaccinia~~ virus of Claim 8, wherein the foreign oncogene is neu, ros, trk or kit gene or [a] immunogenic portions thereof.

11. (Amended) A recombinant vaccinia virus of Claim 9, wherein the oncogene [is devoid of oncogenic activity] or proto-oncogene product which is responsible or potentially responsible for oncogenic activity is rendered inactive by a mutational alteration.

- Sub B4* 12. (Amended) A recombinant vaccinia virus of Claim 8, wherein the [tumor associated antigen] oncogene or proto-oncogene product is [a] an altered growth factor receptor [or growth factor receptor-like surface] molecule.

13. (Amended) A recombinant vaccinia virus of Claim 12, wherein the [tumor associated

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antigen] oncogene or proto-oncogene product is encoded by the c-erbB gene.

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15. (Amended) A method of immunizing against [a cell-encoded tumor associated antigen] an oncogene or proto-oncogene product encoded by a gene of [cellular origin comprising the steps of inoculating an individual afflicted with a tumor which expresses the [antigen] oncogene or proto-oncogene product with a recombinant pox virus capable of expressing the [cell-encoded tumor associated antigen] cellular oncogene or proto-oncogene product.

16. (Amended) *The* ~~A~~ [recombinant pox virus] method of Claim 15, [which] wherein the recombinant pox virus is [of the species] a vaccinia virus.

17. (Amended) A [recombinant pox virus] method of Claim 15, wherein the [tumor-associated antigen] oncogene or proto-oncogene product is [encoded by a human oncogene or proto-oncogene] of human origin.

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18. (Amended) A [recombinant pox virus] method of Claim 15, wherein the [tumor associated antigen] oncogene or proto-oncogene product is [encoded by a human oncogene] of human origin and is rendered inactive with respect to its oncogenic activity, the inactivity resulting from a mutational alteration.

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19. (Amended) A [recombinant pox virus] method of Claim 15, wherein the [tumor antigen] oncogene product is encoded by the neu, ros, trk or kit gene or immunogenic portions thereof.
- Sub 12*
20. (Amended) A [recombinant pox virus] method of Claim 15, wherein the [cell-encoded tumor associated antigen] oncogene or proto-oncogene product is [a] growth factor receptor [or growth factor receptor-like cell surface] molecule.
- The*
21. (Amended) ²⁰~~A~~ [recombinant pox virus] method of Claim ²⁰~~15~~, wherein the altered receptor [or receptor-like cell surface] molecule is encoded by the c-erbB gene.
- Sub 13*
22. (Amended) A method of immunizing an individual against [a cell-encoded tumor-associated antigen] an oncogene or proto-oncogene product encoded by a gene of cellular origin, comprising inoculating the individual afflicted with a tumor bearing [the antigen] the product with a recombinant vaccinia virus capable of expressing the [tumor-associated antigen] oncogene or proto-oncogene product.
23. (Amended) A method of producing [a cell-encoded tumor-associated antigen] an oncogene or proto-oncogene product encoded by a gene of cellular origin, comprising the steps of:
- a. infecting cells with a recombinant pox virus capable of expressing [a cell-

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- encoded tumor associated antigen] the oncogene or proto-oncogene product;
 - b. culturing the cells under conditions which allow the virus to replicate and to express the [antigen] oncogene or proto-oncogene product; and
 - c. isolating the [antigen] oncogene or proto-oncogene product from the cells.
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27. (Amended) A vector for recombination with a pox virus and for incorporation of a DNA sequence encoding [a cellular tumor-associated antigen] an oncogene or proto-oncogene product encoded by a gene of cellular origin, comprising:
- a. a prokaryotic origin replication;
 - b. a pox viral promoter linked to;
 - c. a DNA sequence located downstream of the pox viral promoter, encoding a [for a cell-encoded, tumor-associated antigen] cellular oncogene or proto-oncogene product under the direction of the pox viral promoter; and
 - d. DNA sequences [homologous to a region of the pox virus genome where the DNA sequence encoding the tumor-associated antigen is to be inserted, the DNA sequences flanking the promoter and DNA sequence for the cell-encoded, tumor-associated antigen at both the 5' and 3' ends] of pox virus flanking the promoter and the DNA sequence, the DNA sequences being sufficiently homologous to a region

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of the pox viral genome so that the promoter and the DNA sequence are integrated into the viral genome at a site nonessential for replication of the virus.

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29. (Amended) A vector of Claim [28] 27, wherein the pox viral promoter is a vaccinia promoter [and the flanking DNA sequences are homologous to a region of the vaccinia viral genome which is nonessential for replication of the virus].

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30. (Amended) A vector of Claim 29, wherein the DNA sequence[s] for the [cell-encoded, tumor-associated antigen] oncogene product [are] is selected from the group consisting of the neu gene, the ros gene, the trk gene, the kit gene, the c-erbB gene, [and] or immunogenic portions thereof.

Add the following new claims:

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32. A recombinant pox virus of Claim 1, wherein the oncogene or proto-oncogene product is a protein kinase.

33. A recombinant vaccinia virus of Claim 8, wherein the oncogene or proto-oncogene product is a protein kinase.

34. A method of Claim 15, wherein the oncogene or proto-oncogene product is a protein kinase.